Shipbreaking literature and sustainability framework

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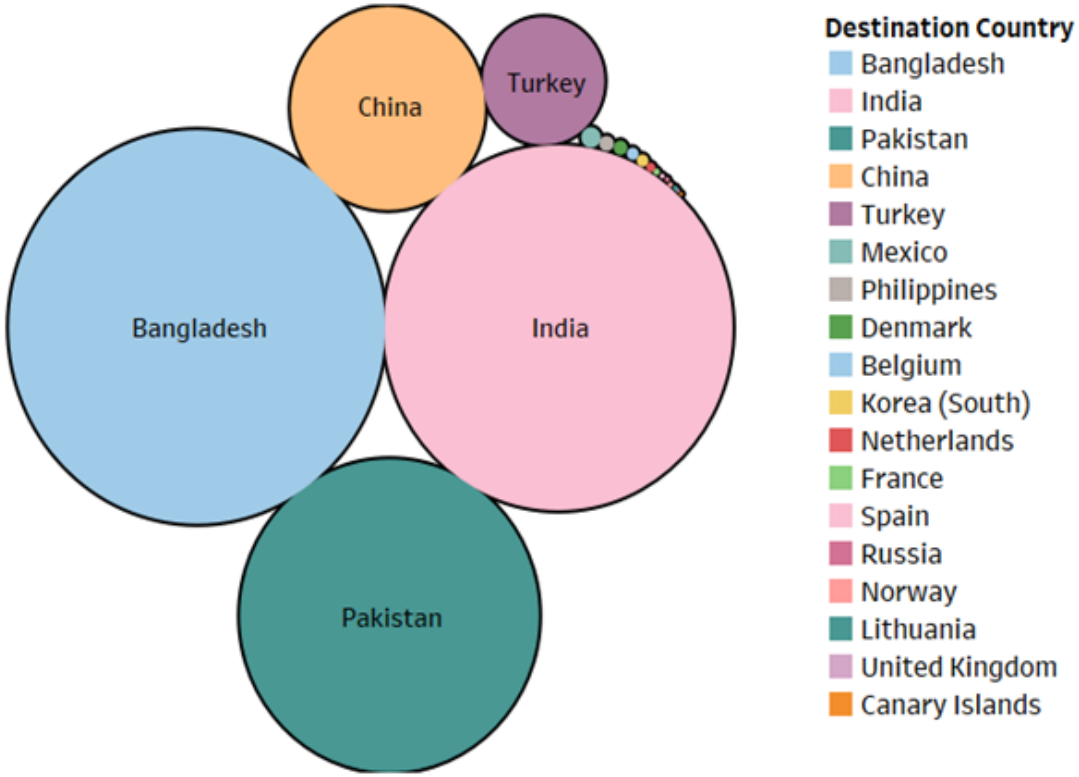
Outline

- Background of shipbreaking industry
  - Social and environmental issues
- Present research pattern
  - CBB based focus
  - Emerging PB
- Challenges
  - lack of complex trade-off research
  - Lack of stakeholder collaboration
- Proposing a sustainability framework

Demolition nation

- Mostly concentrated in south Asian countries
  - Dismantled in open beaches
- China and Turkey
  - More standardized
- Also EU level demolition occurs but very small quantity

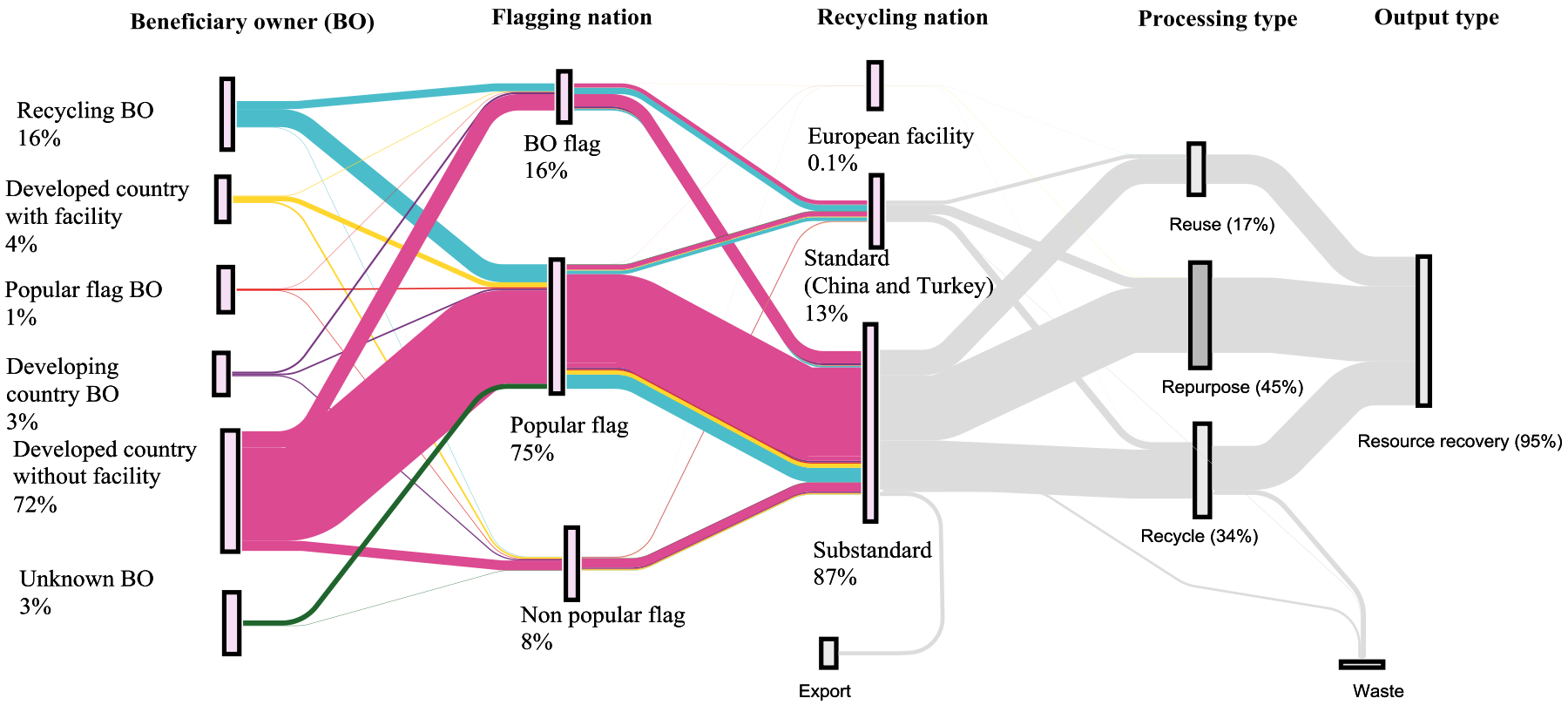


Source: Author

Ship Breaking Industry

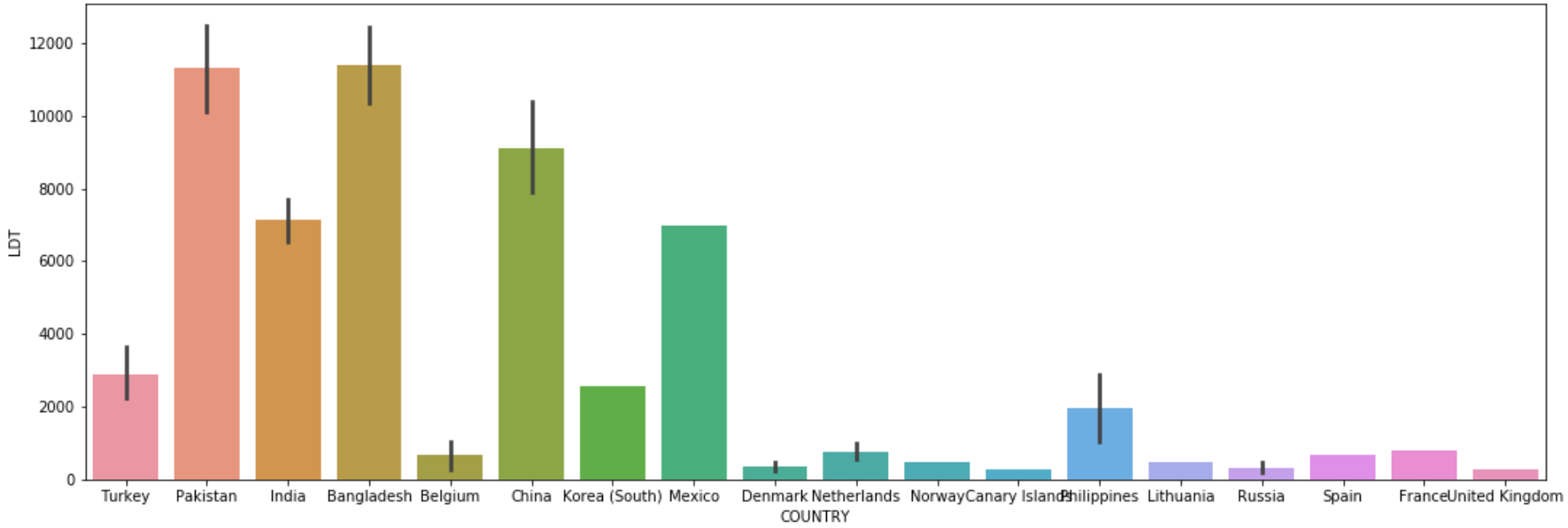
- Break down and recycle container ships, cruise liners, military ships
  - Engine parts
  - Scrap metal
  - Furniture, light fixtures, etc.
- Pollution risks from ship components:
  - Heavy metals
  - Asbestos
  - Oil leaks
- Worker safety and health issues

Photo: Naquib Hossain



Global shipbreaking flow in 2016

Source: Rahman and Kim (2019)



Ship size matters?

(WIMBY vs NIMBY)

Non In My Back Yard

- Developed country does not want to recycle (previously they used to)
- Economically not feasible due to environment and workers wage
- No strong demand for scraps (less scrap price in developed countries)
- Distancing the problems and even economically productive

Welcome In My Backyard

- Steel demand and not natural iron ore
- Need employment, desperate for basic amenities for workers level
- Strong secondary market and government tax income
- Environmental awarness are at the bottom (Maslow Law)

Method

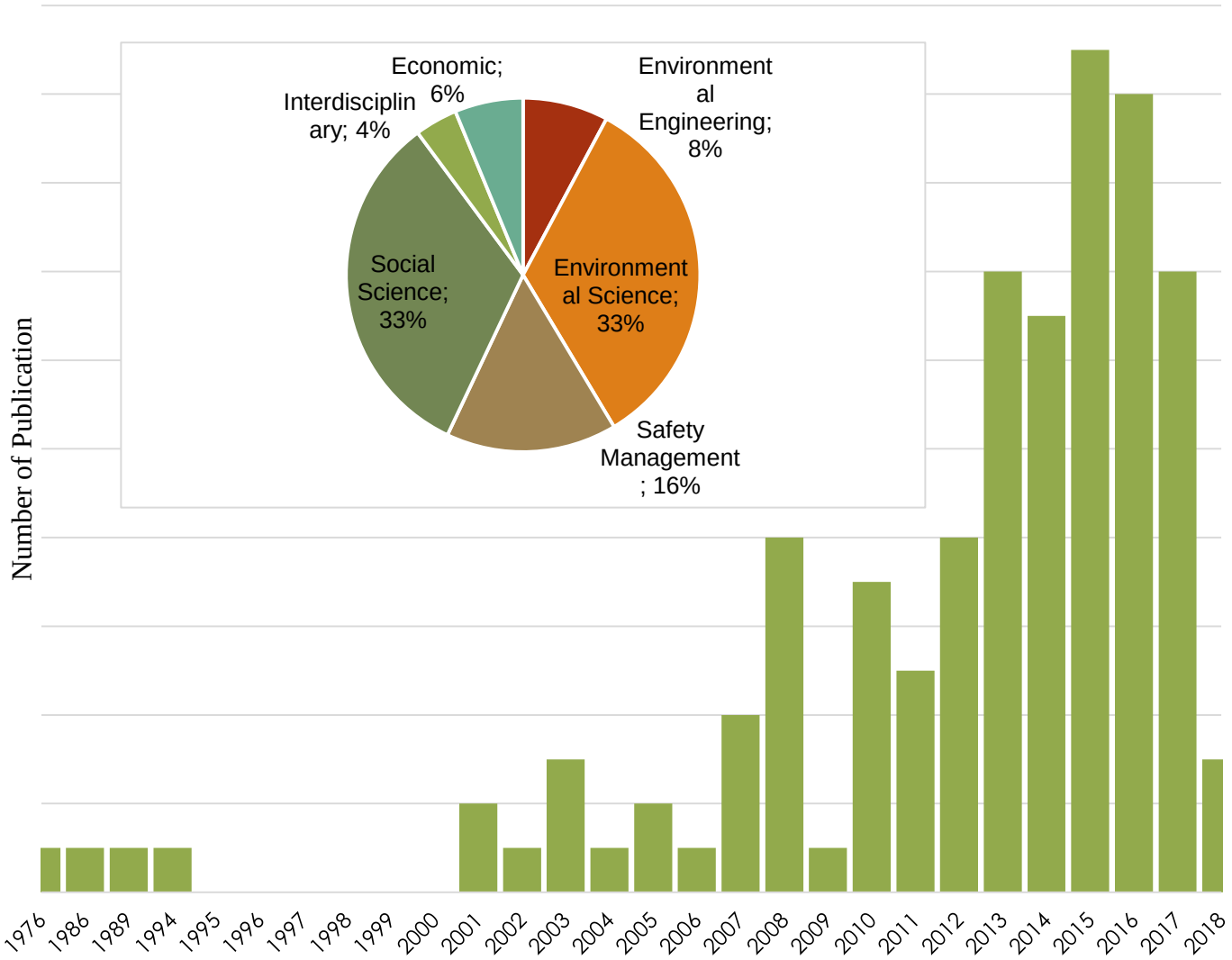
- Content analysis
  - Data definition, population, data context, data analysis boundary and unit of measurement
- Review protocoal from Seuring and Muller (2008) is followed
- Subjective conceptual structure is checked by hybrid approach:
  - literature driven structures and theory driven approaches (Tripple Bottom Line approach)
- Coded by Nvivo qualitative data analysis software

Reviewed 128 papers

Publication increased in recent years

More research on Core business related issues (pollution assessment, occupational hazards etc.)

Economic bottom line is lacking

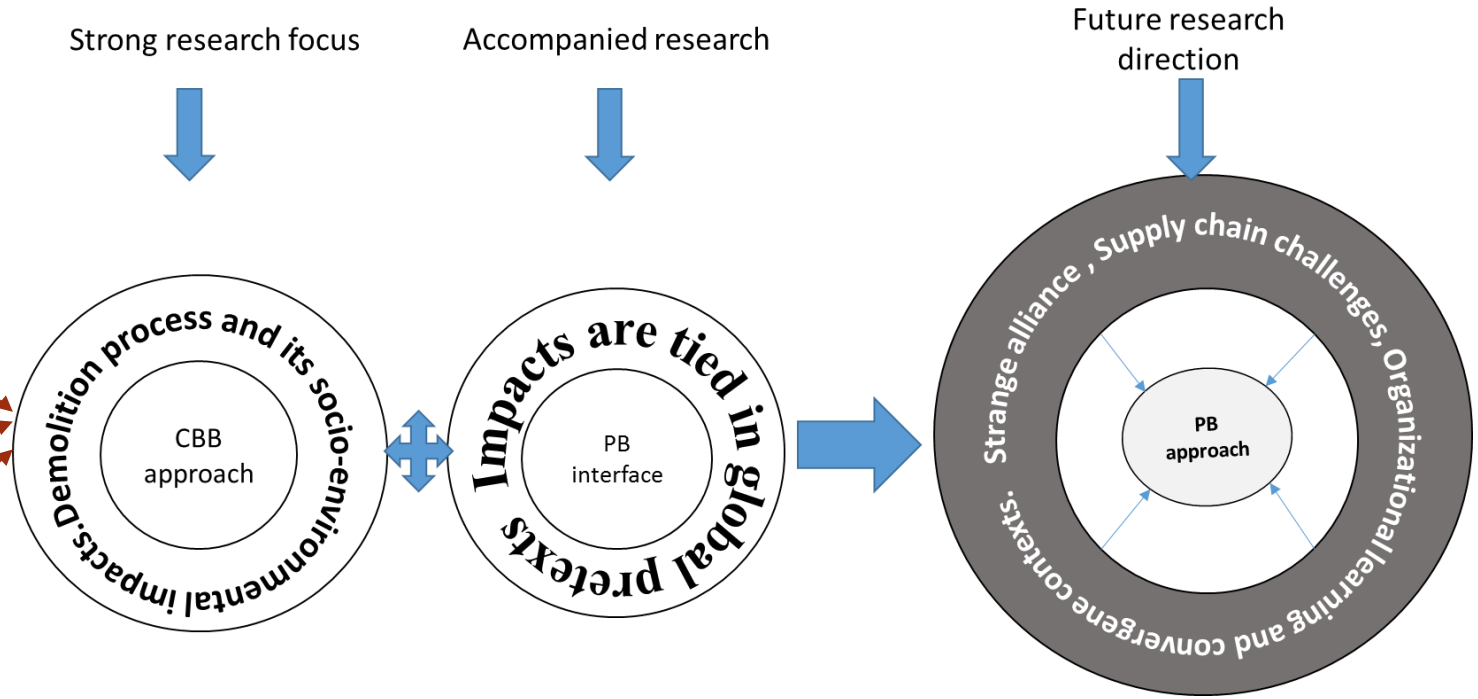


Analytical framework

- Core Business Boundary(CBB)- literature that relates to the core business boundary
  - Focused on the yard activities and their immediate impact
  - Both environmental and social
- Peripheral boundary (PB)- literature that relates to wider areas
  - World system, supply chains, shipowner responsibility, NGOs expectation
  - Mostly social and economic

Result: CBB

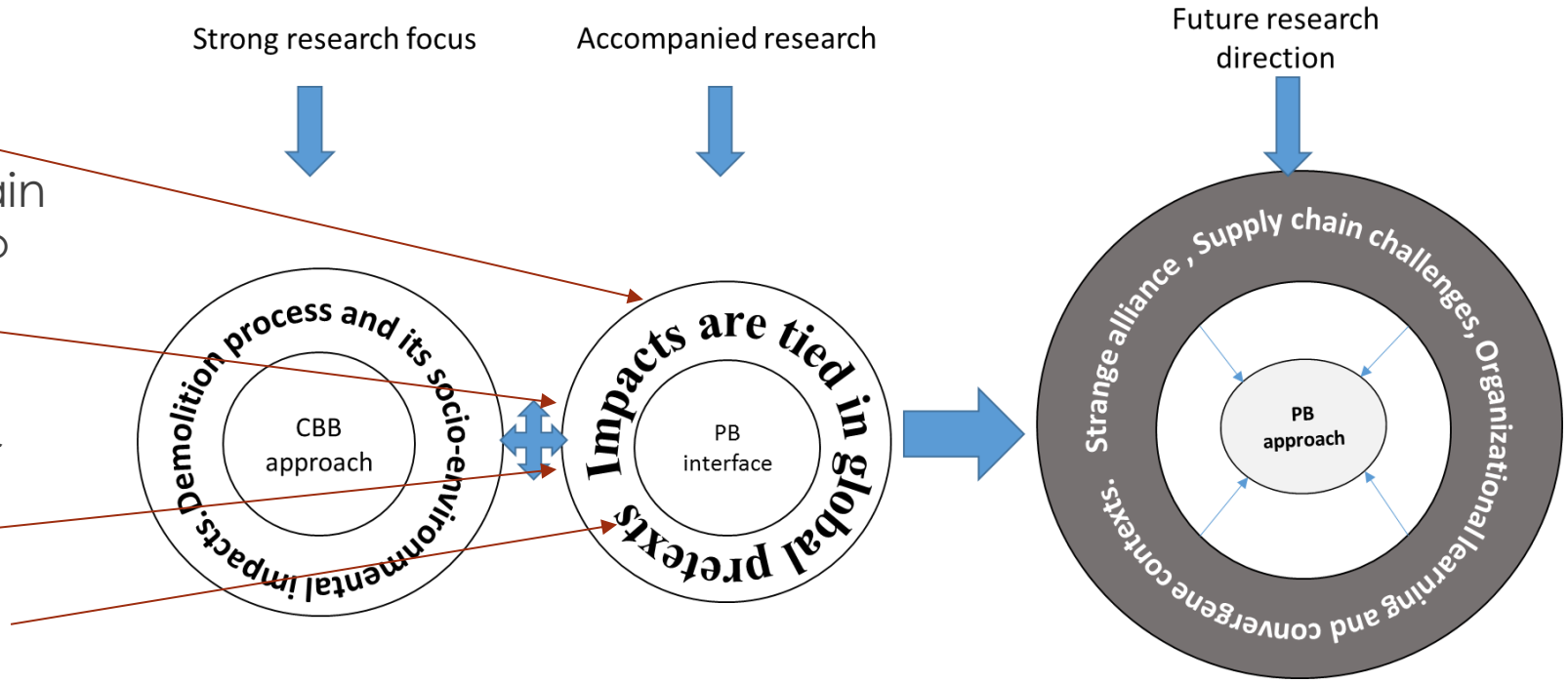
- Environmental
  - Pollution assessment
  - Interdisciplinary
  - Waste based impact assessment
- Social
  - Context related vulnerability
  - Process related vulnerability
  - Management (only yard owner can have authority)



Source: Author

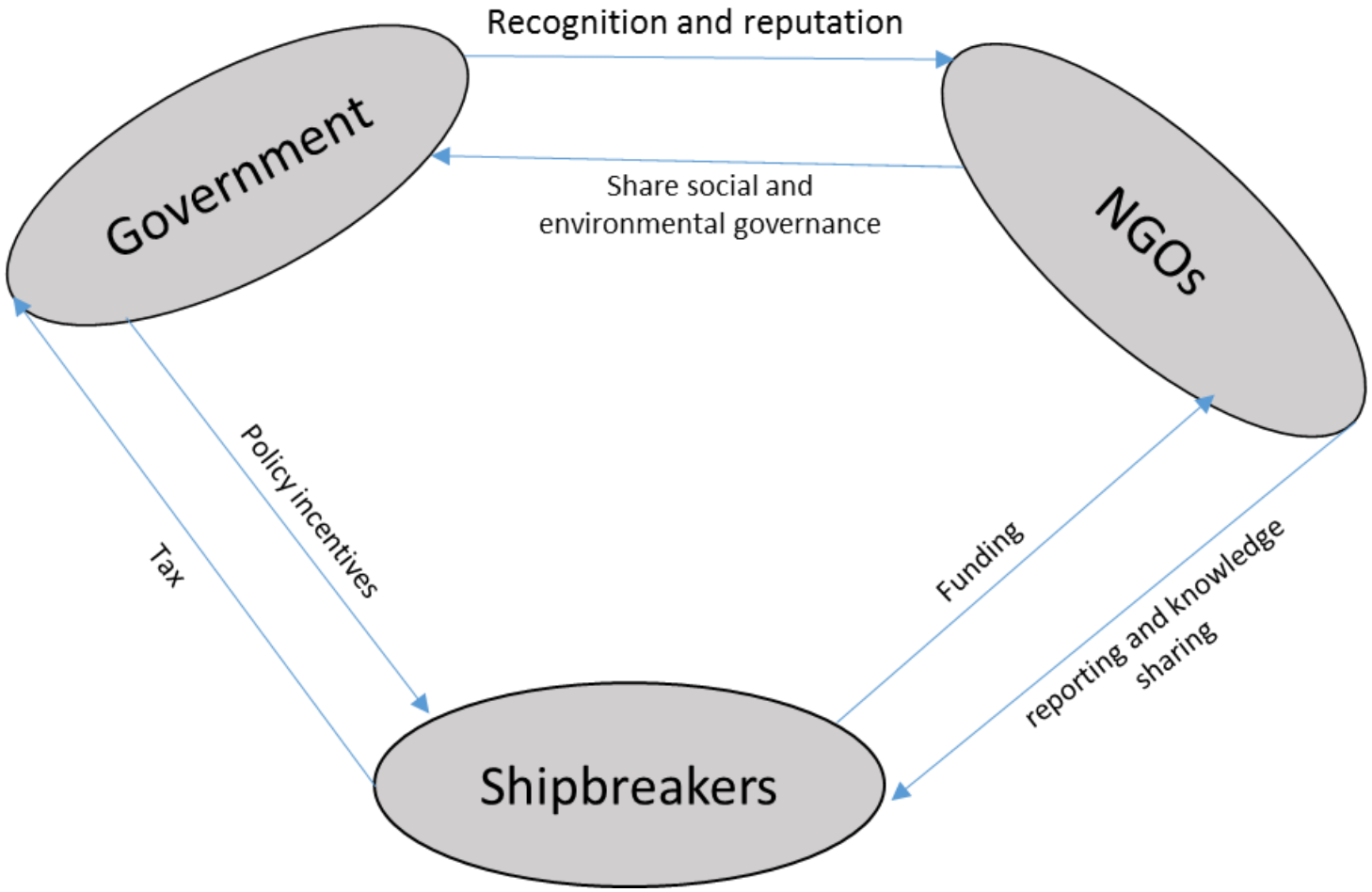
Results: PB

- World system Theory
  - Core and periphery connected
- Back end commodity chain
  - Waste processed back to developed countries
- Supply chain responsibility
  - Owners benefit
- Policy restriction on owner discretion
  - No implementation



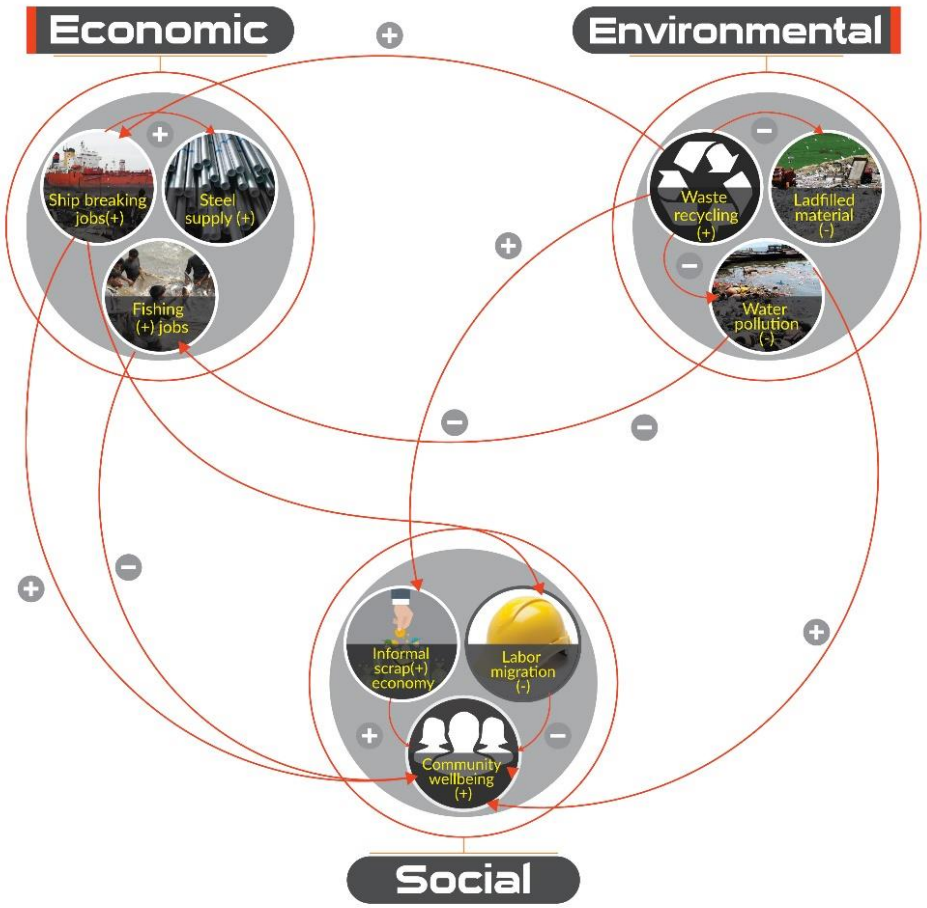
Results: Strange alliance formation

- Literature identified antagonistic relations among stakeholders
  - Need to align the stakeholders is not stressed
  - No strategic plans to devise unified vision
- The stakeholders have potential leverages among them



Shortcomings of the literature

- ignores synergistic interactions, conflicting social goals and trade-offs
  - asbestos use threatens yard workers (local impact)
  - adds to local secondary business (economic dimension) and
  - reduces environmental waste production (environmental dimension)

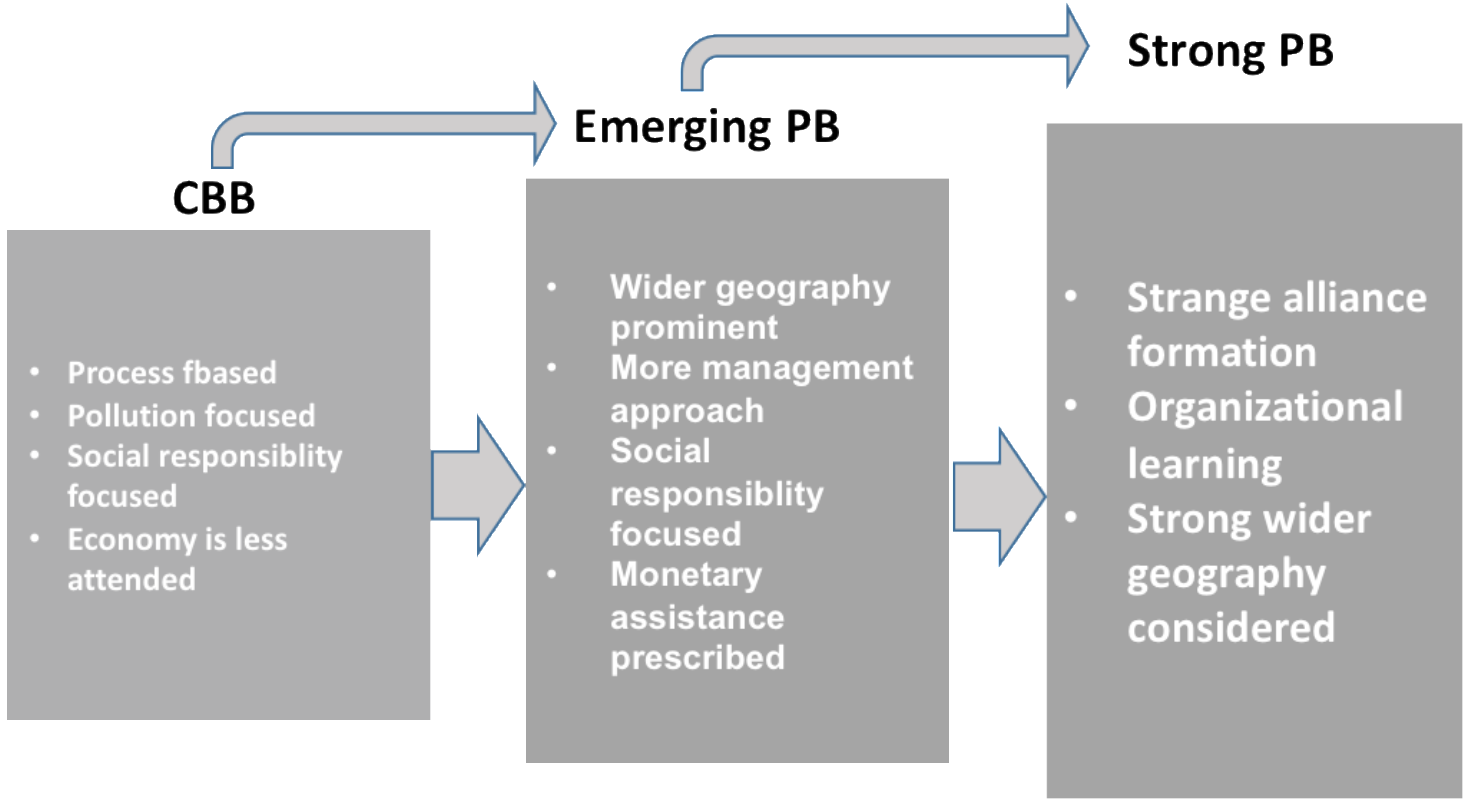


Five top reasons

- Use of natural high tide to beach EoL ships.
  - avoids high initial investment
- Policies are mostly incremental
  - without proposing capacity improvement.
- Valuation problem among stakeholders
- Shipbreaking is never perceived as a business entity
  - Economic bottom line can foster other social and environmental bottom lines
- Finally, complex interdisciplinary issues are not addressed
  - economic gain vs injury costs for workers; yard improvement vs leakage effect; context related vulnerabilities vs western value

Sustainability framework

- Non communication among stakeholders , diverse stakeholders and availability of resources (Ostrom et al.(2009)
- Strange alliance formation process
- Organizational learning need to be emphasized
- Supply chain arrangements should be more responsible



Framework utility

- Help devise concerted goals
  - Finding zones of mutual benefits
  - increase communication among stakeholders
  - Prioritizing financial bottom lines

Conclusion

More interdisciplinary studies are required

Platform for stakeholder communication should be established and facilitated

Issues related to PB should be acknowledged and devise organizational learning pathways

Thank you for your attention